

# WRIGHT STATE

Brehm Laboratory  
513/873-2202

Wright State University  
Dayton, Ohio 45435

February 22, 1983

Mr. R. Richard Thacker  
Viar & Company, Inc.  
Sample Management Office  
300 North Lee Street  
Alexandria, Virginia 22314

Dear Mr. Thacker:

Submitted herewith is our report on analyses accomplished by the Brehm Laboratory under Viar's Order for Special Analytical Services (SAS) No. 332-E, under EPA's Contract Laboratory Program (CLP).

The samples analyzed under this order consisted of four (4) aqueous samples which were shipped to the Brehm Laboratory by the U.S. Environmental Protection Agency, Region V, Chicago, Illinois. Copies of the Wright State and EPA chain-of-custody and shipping documentation, in which the samples are described in greater detail, are appended to this report (Appendix A).

The water samples analyzed under this SAS order were extracted and processed using essentially the procedures described in the attached analytical protocol, (shown in Appendix B) with the following exceptions. The water samples received from EPA were stirred vigorously in order to suspend any particulate matter contained therein and a 100mL aliquot of each sample was removed and transferred to a 250mL flint-glass bottle fitted with a Teflon-lined cap. The three isotopically-labelled internal standards were then added to each sample (20ng.  $^{37}\text{Cl}_4$ -2,3,7,8-TCDD, 40ng.  $^{37}\text{Cl}_4$ -HpCDD, and 72ng.  $^{37}\text{Cl}_4$ -OCDD), along with 40mL of hexane, and the bottles were capped and agitated on a wrist-action shaker for a period of one hour. The bottles were then removed from the shaker, the samples were allowed to stand for a period sufficient for the organic and aqueous phases to separate, and the organic phase was removed and transferred to a clean 250mL flint glass bottle fitted with a Teflon-lined cap. Further processing of the extracts was then accomplished, using the procedures described in the protocol shown in Appendix B, beginning with step A.6.

The processed sample extracts were analyzed by high resolution (capillary column) gas chromatography-mass spectrometry (HRGC/LRMS), again using the procedures described in the protocol shown in Appendix B. The results of these analyses are reported in Table 1 and copies of the actual mass chromatograms obtained in these analyses are shown in Figures 1-50, which include appropriate calibration standard data. The detailed procedures used to calculate CDD/CDF concentrations from these data are illustrated by the information provided in Appendix C.

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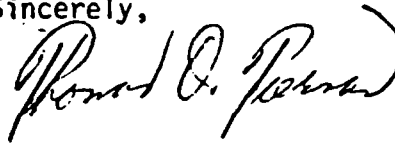
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As can be seen from the results reported in Table 1, no TCDDs or TCDFs were detected in these analyses, with detection limits in the range from 0.4 to 1.0 parts-per-trillion being achieved. Higher CDDs and CDFs were detected in three of the four samples, as shown in Table 1. Recoveries of the labelled internal standards were generally reasonable (44% to 95%), indicating that the methodology is effective.

Should you have further questions regarding this report, please don't hesitate to contact us.

Sincerely,

A handwritten signature in dark ink, appearing to read "Thomas O. Tiernan", written in a cursive style.

Thomas O. Tiernan, Ph.D.  
Professor of Chemistry and  
Director of Brehm Laboratory

TOT/gdg

Attachments

Copy: USEPA Region V  
536 S. Clark Street  
Tenth Floor, CRL  
Chicago, Illinois 60605  
Attn: Curtis Ross